

### **REMARKS/ARGUMENTS**

Claims 24-26, 33-36, and 44-47 are pending. Applicants have added new claims 48-91 which are supported by the Specification. For the convenience of the Examiner, Exhibit "A" attached hereto is a table showing the support for each claim element in the Specification. As set forth more fully below, reconsideration and withdrawal of the Examiner's rejections of the claims are respectfully requested.

#### **Information Disclosure Statement**

The Examiner states that the information disclosure statement (IDS) filed 7/29/04 fails to comply with 37 CFR 1.98(a)(3) as a statement of relevance has not been submitted for "JP11-94234." However, the IDS filed 7/29/04 does not include JP11-94234 or any other reference not in the English language. As such, Applicants submit that the IDS filed 7/29/04 complies with 37 CFR 1.98(a)(3) and respectfully request the Examiner's consideration of the references cited in that IDS.

#### **Objection to the Claims**

The Examiner has objected to Claim 47 as containing a typographical error. Applicants have amended Claim 47 to correct the error.

#### **Rejections Under 35 U.S.C. § 112, First Paragraph**

The Examiner has rejected Claims 1-26, 29 and 33-47 under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

#### **Why an Interference Is Required**

Before responding to the Examiner's rejections, it is important to understand the overlap between the claimed subject matter of Shepard, Jr. et al., and the present application. They each disclose the combustion of the same fuel in the same type of combustion chamber in the presence

of the same iron-bearing material additive under the same temperature regime. The fuel is a low sulfur western or eastern coal (*see, e.g.*, Provisional Application at pages 1 and 3; Subject Application at Figure 2, page 2, lines 15-17, page 3, lines 9-12, page 4, lines 3-4 and 7-9, and page 6, lines 4-5; and Shepard Patent at col. 1, line 62-col. 2, line 3, col. 3, lines 26-34 and 55-57 and Fuels 3 and 4). The combustion chamber is a "slag tap" or "wet bottom" boiler, such as a cyclone-type boiler (*see, e.g.*, Provisional Application at pages 1-5 and 7-8; Subject Application at Figure 1, page 1, lines 18-26, page 5, lines 16-17, page 6, lines 4-5 and 15-18, and page 18, lines 12-13; and Shepard Patent at col. 2, lines 7-8, col. 4, lines 7-10). The iron-bearing material is mill scale from steel production or dust from blast furnace gas cleaning equipment (*see, e.g.*, Provisional Application at pages 4 and 6; Subject Application at page 12, lines 7-12; and Shepard Patent at col. 4, lines 15-16, col. 8, lines 4-5). The temperature regime is that necessary to combust the solid fuel and melt the ash content of the fuel to form slag. (*see, e.g.*, Provisional Application at pages 1-5 and 7-8; Subject Application at page 2, lines 14-15, page 6, lines 4-5 and lines 15-18, Figures 7-8 and page 20, lines 1-21; and Shepard Patent at col. 2, lines 4-50, col. 5, lines 10-50). In chemistry, it is elementary that the use of the same reactants under the same reaction conditions in the same reactor will produce the same results. This conclusion is consistent with the teachings of Shepard et al., and the subject application. Regarding the results from adding the iron-bearing material, Shepard et al. and the subject application *both* teach that the iron-bearing material fluxes the ash formed from the solid fuel, thereby causing the slag to have a lower viscosity than a slag produced by combustion of the coal alone. (Shepard et al. at col. 2, lines 42-47 and lines 58-61; col. 4, lines 22-25; col. 5, line 51-col. 6, line 10; col. 6, lines 52-56; col. 6, line 60-col. 7, line 9; col. 7, lines 43-47; col. 7, lines 57-63; col. 8, lines 7-13; col. 9, lines 21-26; col. 9, lines 56-60; col. 9, line 66-col. 10, line 26; col. 10, lines 52-54; and claim 5; Subject Application at page 18, line 10; page 5, lines 13-17; page 6, lines 19-22; page 7, lines 15-22; page 8, lines 9-10; page 9, lines 14-15; and page 20, lines 1-19).

While applicants use melting point to measure the effect of fluxing by the iron-bearing material, Shepard et al. uses ash fusion temperature characteristics. For western coals, a reduction in melting temperature necessarily equates to a reduction in an ash fusion temperature

characteristic. Accordingly, the present invention overlaps the claimed subject matter of Shepard et al. and an interference is required to resolve the conflict.

**The Examiner's Findings to Date**

In response to Applicant's arguments presented in an Amendment and Response filed July 29, 2004 submitted in reply to the first Office Action having a mailing date of January 29, 2004, the Examiner states as follows:

(i) that the carbon compounds disclosed in the Specification are not specifically disclosed as promoting the reduction of iron oxides;

(ii) that there is no support in the Specification for the claimed iron-containing additive lowering an ash fusion temperature characteristics (AFTs) selected from the group consisting of initial deformation temperature, softening temperature, hemispherical temperature, and fluid temperature in the disclosure, as filed;

(iii) that Applicant's assertion that AFT's are disclosed by the Specification are based on "inherency and implication" and is therefore not persuasive;

(iv) that the Specification makes no reference to the term "composite ash slag" used in the pending claims;

(v) that sub bituminous coal is not disclosed in the Specification by inherency or otherwise; and

(vi) that the claimed numerical limitations 0.5 to about 2.5 percent and 0.1 and 10 weight percent are disclosed in the Specification but the claimed combinations of limitations are not.

**The Law Regarding What Is Required to Comply with the Written Description Requirement**

Before responding to the Examiner's statements, it is important to understand the prevailing law regarding the written description requirement.

"To satisfy the written description requirement, a patent specification must describe the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention." MPEP§2163(I); *See, e.g., Vas-Cath, Inc. v.*

*Mahurker*, 935 F.2d 1555, 1563, 19 USPQ2d 1111, 1116 (Fed. Cir. 1991); MPEP § 2163.02.

“To establish inherency, the extrinsic evidence ‘must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.’” MPEP§2163(I)(B)(3)(b) (quoting *In re Robertson*, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999); *see also* MPEP § 2163.07(a).

“Compliance with the written description requirement is a question of fact which must be resolved on a case-by-case basis.” MPEP § 2163(I)

“While there is no *in haec verba* requirement, newly added claim limitations must be supported in the specification through express, *implicit*, or *inherent* disclosure.” MPEP § 2163(I)(B) (emphasis supplied.); *see, e.g.*, MPEP § 2163.02. Moreover, the U.S. Court of Appeals for the Federal Circuit in *Eiselstein v. Frank*, 52 F.3d 1035, 1038 (Fed. Cir. 1995), reviewed the need for literal support for claim language in the specification and stated:

In order to determine whether a prior application meets the “written description” requirement with respect to later-filed claims, the prior application need not describe the claimed subject matter in exactly the same terms as used in the claims; it must simply indicate to persons skilled in the art that as of the earlier date the applicant had invented what is now claimed. . . . The test is whether the disclosure of the application relied upon reasonably conveys to a person skilled in the art that the inventor had possession of the claimed subject matter at the time of the earlier filing date (citing *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555 (Fed. Cir. 1991) and *Ralston Purina Co. v. Far-Mar-Co, Inc.*, 772 F.2d 1570 (Fed. Cir. 1985)) (internal citations omitted).

By way of illustration, “where no explicit descriptions of a generic invention is to be found in the specification . . . mention of representative compounds may provide an implicit description upon which to base generic claim language.” MPEP § 2163(I)(B)(3)(b) (quoting *In re Smith*, 458 F.2d 1389, 1395, 173 USPQ 679, 683 (CCPA 1972). By way of further example, “[b]y disclosing in a patent application a device that inherently performs a function or has a property, operates according to a theory or has an advantage, a patent application necessarily discloses that function, theory or advantage, *even though it says nothing explicit concerning it.*” MPEP §

2163.07(a) (emphasis supplied.) "The application may later be amended to recite the function, theory, or advantage without introducing prohibited new matter." MPEP § 2163.07(a). Inherent properties which do not constitute new matter are those which would be obvious to one skilled in the art from the very nature of the material. *Ex parte Ayers, et al.*, 108 USPQ 444 (POBA 1955); *see, e.g., In re Nathan, et al.*, 328 F.2d 1005, 140 USPQ2d 601 (CCPA 1964) (stereoconfiguration of a compound is not new matter); *Ex parte Davisson, et al.*, 133 USPQ 400 (POBA 1958) (physical properties of a compound, e.g., optical rotation data and elemental analysis of a disclosed salt, are inherent properties of a compound which can be added to the disclosure after filing); *In re Bowden et al.*, 183 F.2d 115, 86 USPQ 419 (CCPA 1950) (since chemical reactions are frequently unpredictable a specification may be amended at the proper time to supply corrected data subsequently discovered or which is implicit in the application as filed); *Tektronix, Inc. v. United States, et al.*, 165 USPQ 392 (Ct. Cls 1970).

"The examiner has the initial burden of presenting evidence or reasoning to explain why persons skilled in the art would not recognize in the original disclosure a description of the invention defined by the claims." MPEP§2163(I)(B)(3)(b). "The examiner, therefore, must have a reasonable basis to challenge the adequacy of the written description. The examiner has the initial burden of presenting by a preponderance of evidence why a person skilled in the art would not recognize in an applicant's disclosure a description of the invention defined by the claims." MPEP§2163.04.

"Upon reply by applicant, . . . [the examiner is required to] fully respond to applicant's rebuttal arguments, and properly treat any further showings submitted by applicant in the reply. When a rejection is maintained, any affidavits relevant to the 35 U.S.C. 112, para. 1, written description requirement, must be thoroughly analyzed and discussed in the next Office action." MPEP§2163.02.

Thus, lack of literal support for specific claim terms is not enough to support a rejection under 35 U.S.C. § 112 where one of skill in the art would understand from the disclosure that the inventors had possession of the invention, as claimed, at the time of filing. The declaration of Dr. Bisque filed July 29, 2004 is evidence of precisely this understanding by one skilled in the relevant

art. The Examiner cannot discount the statements of Dr. Bisque by simply stating that the declaration is unpersuasive. The MPEP requires more. The Examiner needs to provide factual reasons explaining why the declaration is not persuasive; that is, why it fails to establish why one of ordinary skill in the art would not reasonably conclude that the inventor had possession of the claimed invention. This the Examiner has failed to do. In fact, the Examiner seems to acknowledge that the declaration is sufficient under the law by stating that the applicant is relying on "inherency" to justify the support of the claims under 35 U.S.C. § 112, first paragraph. As noted above, "inherency" establishes compliance with the written description requirement.

Nonetheless, applicant will summarize the contents of the declarations and revisit, in view of the above statement of the law, why the above assertions of the examiner are incorrect.

The Examiner's Assertion That the Carbon Compounds Disclosed in the Specification Are Not Specifically Disclosed as Promoting the Reduction of Iron Oxides.

New claims 57-58, 78-79, 100-101, and 122-123 requires the iron-bearing material to contain at least one carbon compound, with claims 58, 79, 101, and 123 requiring the carbon compound to promote production of iron oxides.

As set forth in ¶¶9-11 of the Declaration of Ramon Bisque under 37 CFR § 1.132 ("Bisque Declaration"), this limitation is contained in the specifications of each of the above-referenced utility application ("Subject Application") and the priority application, namely U.S. Provisional Application Serial No. 60/213,915, filed June 26, 2000, entitled "Low Cost Technology to Improve Operation of Cyclone Furnaces Firing Low-Sulfur Western Coals" ("Provisional Application").

According to ¶10 of the Bisque Declaration, though the Shepard patent fails to identify the precise carbon compound(s) referenced by this phrase, it states at col. 8, lines 13-16, that "[c]arbon may be present in the iron-bearing materials in the form of, for example, blast furnace flue dust, or carbon may be added to these materials to promote reduction of the iron oxides to more readily flux the fuel ash." From this sentence, the carbon referenced in the Shepard patent is likely in the form of elemental carbon, coke, and hydrocarbons.

The Subject and Provisional Applications each reference a number of carbon compounds that would be understood by one of ordinary skill in the art to promote reduction of iron oxides, such as hematite, magnetite, and wustite, under the thermal conditions of the combustion chamber. These compounds include hydrocarbons in the coal feed itself (Provisional Application at page 7 and Subject Application at page 6, lines 6-14); oils and greases (Provisional Application at page 4 and Subject Application at page 12, lines 14-17); xanthan gum (Provisional Application at page 6 and Subject Application at page 13, lines 10-13); and residual hydrocarbons remaining in the boiler slag, which may be added to the iron-bearing material as a flow aid (Provisional Application at page 8 and Subject Application at page 15, lines 1-2). It is important to note that claims 57, 78, 100, and 122 read on the carbon compounds in the coal itself as the claim simply requires that at least one carbon compound be introduced along with the iron-bearing material.

Moreover, as admitted in part by the Shepard patent, iron-oxide reducing carbon compound(s) will be inherently present in the iron-bearing material itself when the iron-bearing material is a byproduct of steel and iron manufacturing, such as Basic Oxygen Furnace or BOF flue dust or precipitator fines, blast furnace flue dust, electric arc furnace dust, and mill scale fines (Provisional Application at page 4 and Subject Application at page 12, lines 7-12, and page 18, lines 13-14).

For these reasons, one of ordinary skill in the art, based on the specifications of the Subject Application and Provisional Application, would conclude that, at the time each application was filed, the inventors had possession of an iron-containing additive containing at least one carbon compound to promote reduction of iron oxides in the iron-containing additive because it is inherent that the carbon compounds disclosed in the specification, namely hydrocarbons in the coal itself, oils and greases, xanthan gum, and residual hydrocarbons remaining in the boiler slag, will reduce the iron oxides in the iron-bearing material. (Bisque Declaration at ¶11)

The Examiner's assertions that there is no support in the Specification for the claimed iron-containing additive lowering an ash fusion temperature characteristics (AFTs) selected from the

group consisting of initial deformation temperature, softening temperature, hemispherical temperature, and fluid temperature in the disclosure, as filed, and that Applicant's claim that AFT's are disclosed by the Specification are based on "inherency and implication" and is therefore not persuasive.

Claim 24 requires at least a portion of the iron bearing material to flux the ash slag to produce a composite ash slag having at least one ash fusion temperature characteristic selected from the group consisting of initial deformation temperature, softening temperature, hemispherical temperature, and fluid temperature less than the same ash fusion temperature characteristic of the ash slag produced from combustion of the solid fuel alone. New claims 87, 109, and 131 each require, during the combustion of the solid fuel in the presence of the iron-bearing material, that at least one ash fusion temperature characteristic selected from the group consisting of initial deformation temperature, softening temperature, hemispherical temperature, and fluid temperature be less than the same ash fusion temperature characteristic of an ash slag produced from combustion of the solid fuel alone.

As set forth in ¶¶8 and 12-20 of the Bisque Declaration, this limitation is contained in the specifications of each of the Subject Application and the Provisional Application. At the outset, it is important to understand that, in certain embodiments, the Provisional Application, Subject Application, and Shepard Patent are directed to the same invention. They each disclose the combustion of the same fuel in the same type of combustion chamber in the presence of the same iron-bearing material additive under the same temperature regime. The fuel is a low sulfur western or eastern coal (*see, e.g.*, Provisional Application at pages 1 and 3; Subject Application at Figure 2, page 2, lines 15-17, page 3, lines 9-12, page 4, lines 3-4 and 7-9, and page 6, lines 4-5; and Shepard Patent at col. 1, line 62-col. 2, line 3, col. 3, lines 26-34 and 55-57 and Fuels 3 and 4). The combustion chamber is a "slag tap" or "wet bottom" boiler, such as a cyclone-type boiler (*see, e.g.*, Provisional Application at pages 1-5 and 7-8; Subject Application at Figure 1, page 1, lines 18-26, page 5, lines 16-17, page 6, lines 4-5 and 15-18, and page 18, lines 12-13; and Shepard Patent at col. 2, lines 7-8, col. 4, lines 7-10). The iron-bearing material is mill scale from steel production or dust from blast furnace gas cleaning equipment (*see, e.g.*, Provisional



Application at pages 4 and 6; Subject Application at page 12, lines 7-12; and Shepard Patent at col. 4, lines 15-16, col. 8, lines 4-5). The temperature regime is that necessary to combust the solid fuel and melt the ash content of the fuel to form slag. (see, e.g., Provisional Application at pages 1-5 and 7-8; Subject Application at page 2, lines 14-15, page 6, lines 4-5 and lines 15-18, Figures 7-8 and page 20, lines 1-21; and Shepard Patent at col. 2, lines 4-50, col. 5, lines 10-50). In chemistry, it is elementary that the use of the same reactants under the same reaction conditions in the same reactor will produce the same results. Thus, the various claim limitations discussed below are inherent in the disclosures of the Provisional Application and Subject Application. (Bisque Declaration at ¶8)

Moreover, the Provisional and Subject Applications specifically state that the iron-bearing additive lowers the ash melting temperature and therefore implies that it also lowers the AFT characteristics. The Subject and Provisional Applications each state that the iron-bearing additive fluxes the ash (Provisional Application at pages 3-4, 5, and 7 and Subject Application at page 5, lines 13-14, page 6, lines 19-22, page 8, lines 10-11) and lowers the melting temperature of the ash (Provisional Application at page 1 and Subject Application at page 7, lines 15-18, Figures 7-8, and page 20, lines 1-21). The AFT characteristics of initial deformation temperature, softening temperature, hemispherical temperature, and fluid temperature represent a continuum of constituent melting points leading to the complete melting of the ash. The characteristics are arbitrary and established by subjective visual observation. (Bisque Declaration at ¶13)

According to pages 20-5 through 20-7 of "*Steam/its generation and use*", by Babcock & Wilcox (1972) ("the Babcock & Wilcox Article" attached to the Bisque Declaration as Exhibit "A"), the AFT properties are determined as part of the ASTM Standard D 1857, *Fusibility of Coal and Coke Ash*". According to the standard, an ash sample is prepared by burning coal under oxidizing conditions at temperatures of 1470 to 1650°F. The ash is pressed into a mold to form a triangular pyramid cone 0.75 in. in height with a 0.25 in. triangular base. The cone is heated in a furnace at a controlled rate to provide a temperature increase of 15°F per minute. The initial deformation temperature (IT or ID) refers to the temperature at which the tip of the pyramid begins to fuse or show signs of deformation. The softening temperature (ST) is the temperature

at which the sample has deformed to a spherical shape where the height of the cone is equal to the width at the base ( $H=W$ ). The softening temperature is commonly referred to as the fusion temperature. The hemispherical temperature (HT) is the temperature at which the cone has fused down to a hemispherical lump and the height equals one half the width of the base ( $H=1/2W$ ). The fluid temperature (FT) is the temperature at which the ash cone has melted to a nearly flat layer with a maximum height of 0.0625 in. (Bisque Declaration at ¶14)

It is well known that each of the AFT characteristics, namely IT, ST, HT, and FT, represent a melting point of one or more ash constituents. Regarding the relationship between the AFT properties and the melting point of the ash, the Babcock & Wilcox Article states:

The gradual deformation of the ash cone is generally considered to result from differences in melting characteristics of the various ash constituents. As the temperature of the sample is increased, compounds with lowest melting temperature begin to melt, causing the initial deformation. As the temperature continues to increase, more of the compounds melt and the degree of deformation proceeds to the softening and hemispherical stages. The process continues until the temperature is higher than the melting point of most of the ash constituents and the fluid stage is reached.

(The Babcock & Wilcox Article at page 20-6.) (Bisque Declaration at ¶15)

For at least these reasons at the times that the Subject and Provisional Applications were filed, the Bisque Declaration concludes that one of ordinary skill in the art would understand the phrase, "melting temperature of the ash" (as used in the Subject Application and Provisional Application), to refer to the last (or highest) of a sequence of melting points for differing ash constituents and require that each of the lower melting point constituents have melted. The melting temperature of the ash is therefore synonymous with the fluid temperature. (Bisque Declaration at ¶16)

Regarding the AFT-characteristic limitation and the fluxing limitation, namely that the "iron bearing material fluxes the ash slag" in claims 1, 11, 19, 24 and 33 (see Office Action at pages 3, 4, 5, and 33), the Provisional and Subject Applications further use the term "flux" and "fluxing agent". (Provisional Application at pages 1, 3-4, and 6-8 and Subject Application at page 5, lines 13-14, page 6, lines 19-22, page 8, lines 10-11). According to *Hawley's Condensed*

*Chemical Dictionary*, "flux" is defined as "[a] substance that promotes fusing of minerals or metals or prevents the formation of oxides." It further defines "fuse" as "[o]f a solid, to *melt*, e.g., a fused salt." (Emphasis supplied.) The terms "flux" and "fuse" would further suggest to one of ordinary skill in the art that the various melting points of the ash constituents, denoted by the AFT properties, are lowered by the iron-bearing additive disclosed in the Provisional Application and Subject Application. (Bisque Declaration at ¶17)

Claims 24, 87, 109, and 131 further require the iron-bearing material to cause a reduction in at least one AFT characteristic and ash slag melting point relative to the ash slag in the absence of the iron-bearing material. The Provisional and Subject Applications refer to the iron-containing additive lowering the  $T_{250}$  (or the temperature at which the ash would have a viscosity of 250 poise, which is an important indicator for the minimum temperature at which the slag will flow) for low-sulfur eastern and western coals having low iron and high calcium contents. (Provisional Application at pages 1 and 4-5 and Subject Application at Figure 2, page 2, lines 15-17, page 7, lines 15-18, page 9, lines 14-15, page 19, lines 5-10, Figures 7-8 and page 20, lines 3-21). As shown in Figures 7-8 of the Subject Application, the iron-containing additive lowers the slag viscosity, at temperatures above about 2275°F, compared to a slag when no additive is used. It is inherent that lowering the  $T_{250}$  of low-sulfur coals having low iron and high calcium contents and low-sulfur eastern coals will lower each of the AFT properties referenced above. (Bisque Declaration at ¶¶18 and 20)

For at least the reasons set forth above, the Bisque Declaration concludes that the AFT-characteristic and fluxing limitations are each described in the specifications of both the Provisional and Subject Applications in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time each of the applications was filed, had possession of the claimed invention because it is inherent in the Specification that the AFT's of the coal will be reduced by the disclosed iron-bearing materials, namely mill scale from steel production or dust from blast furnace gas cleaning equipment.. (Bisque Declaration at ¶19)

The Examiner's Assertion That the Specification Makes No Reference to the Term "Composite Ash Slag" Used in the Pending Claims.

Claims 24, 68, 90, and 112 each require that, during solid fuel (coal) combustion, the iron-bearing material fluxes the ash slag to produce a composite slag.

As set forth above and in ¶¶12-20 of the Bisque Declaration, this limitation is contained in the specifications of each of the Subject and the Provisional Applications.

Moreover, the word "composite" means "formed of distinct parts". Because the Specification clearly teaches the addition to the boiler of both an iron-bearing material and coal, it is inherent that the ash slag in the boiler will be a composite in that it is formed from two distinct parts.

The Examiner's Assertion That Sub Bituminous Coal Is Not Disclosed in the Specification by Inherency or Otherwise.

New claims 48, 69, 90, and 113 require the solid fuel to include a sub-bituminous coal.

Applicants draw the Examiner's attention to page 6, lines 6-14, and specifically to page 6, line 11, of the specification, as filed, wherein the use of sub-bituminous coal is *literally* supported.

Moreover as set forth in ¶¶7-8 of the Durham Declaration, this limitation is contained in the specifications of each of the Subject and the Provisional Applications. According to the Durham Declaration, the Subject and Provisional Applications each reference coals from the Powder River Basin of Montana and Wyoming (Provisional Application at pages 3-5 and 8; Subject Application at page 1, lines 8-11) and the Subject Application refers specifically to "sub-bituminous coal" as the solid fuel feed (Subject Application at page 6, line 9). Because coal in the Powder River Basin is primarily sub-bituminous coal, the Durham Declaration concludes that the reference to the Powder River Basin would convey to one skilled in the relevant art that the inventors, at the time the Provisional and Subject Applications were filed, had possession of the invention claimed in claims 2 and 20. (Durham Declaration at ¶8)

The Examiner's Assertion That the Claimed Numerical Limitations 0.5 to about 2.5 Percent and 0.1 and 10 Weight Percent Are Disclosed in the Specification but the Claimed Combinations of Limitations Are Not.

Claims 14 and 29 have been canceled and this assertion is now moot.

The Requirement of Claims 3, 17, 22, and 36 That at Least One AFT Characteristic or the Melting Point of the Ash Slag Be less than 2600°F.

Claims 3, 17, and 22 have been canceled. Claim 36 requires that the melting point of the composite ash slag be less than 2600°F. New claims 66, 88, 110, and 132 require that the AFT characteristic of fusion temperature be less than 2600°F.

As set forth in ¶¶21-23 of the Bisque Declaration, this limitation is contained in the specifications of each of the Subject and the Provisional Applications. The Provisional Application at page 1 and the Subject Application at page 2, lines 14-15, disclose that the ash (from which the molten slag is formed), in cyclone boilers, must be melted at normal combustion temperatures ranging from 2,600 to 3,000°F. Moreover, the Subject Application at page 20 and in Figure 7 shows that the ash/slag is melted at a temperature below 1,900°F. (Bisque Declaration at ¶22.)

According to the Bisque Declaration for at least the reasons set forth above, the requirement of claims 3, 17, 22, and 36 is described in the specifications of both the Provisional and Subject Applications in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time each of the applications was filed, had possession of the claimed invention.

The Requirement of Claim 5 That the Boiler Is a Wet-Bottom Boiler and Cyclone Boiler.

New claims 50, 71, 93, and 115 require that the boiler is a cyclone boiler.

As set forth in ¶¶9-10 of the Durham Declaration, this limitation is contained in the specifications of each of the Subject and the Provisional Applications. The Subject and Provisional Applications each specifically refer not only to the general class of boiler that includes the cyclone boiler, namely wet-bottom boilers, (Provisional Application at page 2; Subject

Application at page 6, lines 15-18) but also specifically to cyclone boilers (Provisional Application at pages 1-5 and 7-8 and Subject Application at Figure 1, page 1, line 24 to page 2, line 19, page 5, lines 16-17, and page 6, lines 15-18). These references would convey to one skilled in the relevant art that the inventors, at the time the Provisional and Subject Applications were filed, had possession of the invention claimed in claim 5. (Durham Declaration at ¶10.)

In view of the foregoing remarks, applicants submit that there is adequate written description in the specification for the pending claims and request the Examiner's rejection under 35 U.S.C. § 112, first paragraph, be withdrawn.

In light of the newly added claims, Exhibit "B" is a proposed new count for the interference to replace the counts previously proposed in the Request by Applicants for Interference Pursuant to 37 CFR§1.607 and Utility Continuation Patent Application under 37 CFR§1.53(b) filed July 18, 2003. As will be appreciated by the Examiner, a separate count must be used for each independently patentable invention. It is applicant's position that there is only one independently patentable invention.

Applicant wishes to clarify the intended meaning of certain claim language in light of the Federal Circuit decision "SuperGuide Corporation v. DirecTV Enterprises, Inc., et al., 358 F.3d 870 (Fed. Cir. 2004). In that decision, the Federal Circuit held, under the unique facts of that case, that the phrase "at least one of a desired program start time, a desired program end time, a desired program service, and a desired program type" means "at least one of a desired program start time, at least one of a desired program end time, at least one of a desired program service, and at least one of a desired program type".

Applicant has used the phrases "at least one of . . . and" and "and/or" in a number of claims and wishes to clarify to the Examiner the proper construction of this phrase. Applicant intended the phrases "at least one . . . and" and "and/or" as used in the claims to be an open-ended expression that is both conjunctive and disjunctive in operation. For example, the expressions "at least one of A, B and C" and "A, B, and/or C" mean A alone, B alone, C alone, A and B together, A and C together, B and C together, and A, B and C together. Applicant believes that this construction is consistent with the Examiner's construction of the claims in the Office Action. If

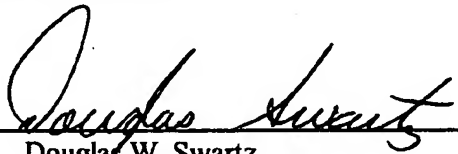
Application No. 10/622,677  
Reply to Office Action of Oct. 6, 2004  
Amendment dated Mar. 31, 2005

the Examiner disagrees with this construction, Applicant respectfully requests that the Examiner notify Applicant accordingly so that Applicant can further amend the claims.

Based upon the foregoing, Applicants believe that all pending claims are in condition for allowance and such disposition is respectfully requested. In the event that a telephone conversation would further prosecution and/or expedite allowance, the Examiner is invited to contact the undersigned.

Respectfully submitted,

SHERIDAN ROSS P.C.

By:   
Douglas W. Swartz  
Registration No. 37,739  
1560 Broadway, Suite 1200  
Denver, Colorado 80202-5141  
(303) 863-9700

Date: March 31, 2005